GOVERNMENT OF THE GOLD COAST.

MEDICAL AND SANITARY REPORT

FOR THE YEAR

1915.

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GOLD COAST.

ANNUAL REPORT FOR THE YEAR ENDING DECEMBER 31st, 1915.

I.—ADMINISTRATIVE.

1. MEDICAL STAFF ON 31st DECEMBER, 1915.

1 Principal Medical Officer.
1 Deputy Principal Medical Officer.
1 Senior Sanitary Officer.
2 Provincial Medical Officers.
6 Senior Medical Officers.
2 Sanitary Officers.
1 Pathologist.
46 Medical Officers, 6 of whom are Medical Officers of Health.
5 Vacancies.
1 Analytical Chemist.
1 Laboratory Assistant—Vacant.

European Nursing Staff.

3 Senior Nurses.
3 Nurses.
3 Vacancies.

Principal Members of Subordinate Staff.

1 Chief Clerk.
1 First Class Clerk.
4 Second Class Clerks.
6 Third Class Clerks.
2 Probationers.
2 Temporary Clerks.
1 Messenger.

Dispensing Staff.

1 Chief Dispenser.
4 First Class Dispensers.
10 Second Class Dispensers.
10 Third Class Dispensers.

Native Nurses.

6 Second Class Nurses.
26 Third Class Nurses. (8 Vacancies).
22 Nurses.

Medical Store.

1 Storekeeper—Vacant.
1 Assistant Storekeeper.

Lunatic Asylum.

1 Chief Attendant.
1 Assistant Attendant.
9 Attendants.
1 Matron.
1 Gatekeeper.

2. CHANGES IN STAFF.

The Honourable the Principal Medical Officer, Dr. F. G. Hopkins, proceeded on leave on August 1st.

The Deputy Principal Medical Officer, Dr. E. H. Tweedy, proceeded on leave on February 1st and returned on July 5th.

The Senior Sanitary Officer, Dr. D. Alexander, returned from leave on April 1st.

Dr. J. A. Clough, Provincial Medical Officer, was promoted to the rank of Deputy Principal Medical Officer on July 16th, and transferred to Nigeria, Southern Provinces.

Dr. M. E. O'Dea, Senior Medical Officer, Nigeria, Southern Provinces, was promoted to the rank of Provincial Medical Officer on July 16th, and transferred to this Colony.

Dr. E. W. Graham, Provincial Medical Officer, proceeded on leave on October 1st. Dr. E. C. Adams acted as Provincial Medical Officer, Northern Territories, during the absence on leave of Dr. Graham.

The following Officers were promoted to the rank of Senior Medical Officer :—Drs. F. S. Harper, C. H. D. Ralph, and C. V. Le Fanu.

Drs. T. H. Dugon and G. E. H. Le Fanu served with the Togoland Field Force for varying periods.

Drs. M. B. Hay and G. J. W. Keigwin continued to serve under the Admiralty and War Office respectively.

Dr. E. M. Condy's appointment was terminated on the ground of ill-health.

It is with much regret that I have to record the sad loss of Miss Julia Winchester, Nursing Sister, who perished in the sinking of the S.S. "Falaba" on March 28th, 1915.

Mr. H. E. Course was appointed Analytical Chemist and attached to the Waterworks staff.

The following Officers served with the Cameroons Expeditionary Force in 1915 :—

Dr. W. W. Claridge, Senior Medical Officer.
,, F. H. Storey, Medical Officer.
,, J. M. O'Brien, ,,
,, H. T. Palmer, ,,
,, G. de P. D'Amico, ,,
,, J. A. Beamish, ,,
,, M. W. Fraser, ,,
,, J. E. Moffatt, ,,
,, J. Donnelly, ,,
,, H. F. Hamilton, ,,
,, W. A. Ryan, ,,
,, W. G. Watt, Medical Officer of Health.
,, A. J. R. O'Brien, ,, ,,
,, M. Graves, Medical Officer.
,, W. Telfer, ,,
,, C. R. Patton, ,,
,, R. G. Ball, ,,
,, J. I. Baëza, ,,
Mr. Gordon Rix, Superintending Sanitary Inspector.

3. FINANCIAL.

(*a*) STATEMENT OF REVENUE FOR THE YEAR 1915.

Total Revenue	£1,475 0 9

(*b*) STATEMENT OF EXPENDITURE FOR THE YEAR 1915.

Medical Department (including Sanitary Branch)—			
Personal Emoluments	£55,550	12	9
Other Charges	72,214	16	7
Total	£127,765	9	4

II.—PUBLIC HEALTH.

(*a*) GENERAL REMARKS.

4. The general health of the Colony and its Dependencies was good, and shews considerable improvement on that of the previous year.

(*i*) GENERAL DISEASES.

5. *Beri-Beri.*—A steady decrease in the number of cases is still observable.

	1913.	1914.	1915.
Cases	114	67	50
Deaths	15	Nil	4

Rheumatic Fever.—

	1914.	1915.
Cases	13	56

6. *Chronic Rheumatism.*—

Cases	3,029	1,996

Rheumatic Fever appears to be on the increase, but no case was fatal.

(*ii*) COMMUNICABLE DISEASES.

Mosquito- or Insect-borne.

7. *Malaria.*—There is a slight increase in the number of cases. It must be borne in mind that the number of deaths given merely represents those who died in hospital, and is no guide to the general mortality from this disease.

	1913.	1914.	1915.
Cases	2,565	2,712	2,745
Deaths	Nil	5	3

8. *Blackwater Fever.*—It will be noted that there is a decrease of over 50 per cent. in the number of cases recorded.

	1913.	1914.	1915.
Cases	21	21	9
Deaths	7	6	3
Mortality, per cent. ...	33·3	28·5	33·3

Of the cases in 1915, two were officials (one fatal), and seven non-officials (two fatal).

No case was reported amongst natives.

9. *Yellow Fever.*—Only two cases occurred during the year, one being a European non-official at Nsawam, the other a Krooman at Mangoase. The latter was not seen by a medical man before death, the diagnosis being established by a post-mortem examination.

Both cases ended fatally.

No cases were reported in Ashanti or the Northern Territories.

The following table shews the reported cases for the past three years :—

1913.

	Cases.	Deaths.	Mortality.
Europeans ...	11	6	54·5 per cent.
Natives ...	9	2	22·2 ,,

1914.

	Cases.	Deaths.	Mortality.
Europeans ...	9	4	44·4 per cent.
Natives ...	10	5	50·0 ,,

1915.

	Cases.	Deaths.	Mortality.
Europeans ...	1	1	100 per cent.
Natives ...	1	1	100 ,,

10. *Trypanosomiasis.*—Seventeen cases were under treatment, and of these three died.

INFECTIOUS AND EPIDEMIC DISEASES.

11. *Small-pox.*—It is gratifying to see that last year's improvement has been maintained.

	1913.	1914.	1915.
Cases	168	23	12
Deaths	23	1	Nil

12. *Enteric Fever.*—There were 21 cases with four deaths, compared with seven cases and one death in the previous year.

Fourteen of the cases occurred in Coomassie.

13. *Chicken-pox.*—There was a marked decrease in the number of cases, viz., 158, compared with 266 last year.

14. *Dysentery.*—The type of most of the cases was not determined, but 78 were definitely diagnosed as amœbic and 12 as bacillary.

	1913.	1914.	1915.
Cases	853	787	622
Deaths	36	15	21
Mortality, per cent. ...	4·2	1·9	3·3

15. *Yaws.*—A substantial decrease in the number of cases is noticeable.

	1913.	1914.	1915.
Cases	634	614	529

16. *Gonorrhœa.*—This disease still increases steadily, and no doubt the increase is even greater than the figures suggest, for many cases seek no medical advice and others undergo native treatment.

	1913.	1914.	1915.
Cases	703	809	850

17. *Syphilis.*—The foregoing remarks on gonorrhœa apply equally well to this disease; in fact the two diseases are frequently found co-existent in the same patient.

	1913.	1914.	1915.
Primary	158	131	133
Secondary	256	258	327
	414	389	460

18. *Tuberculosis.*—The number of cases shows very little change from last year, but a hopeful feature is the small, but steady, decline in the mortality.

	1913.	1914.	1915.
Cases...	141	272	276
Deaths	15	21	19
Mortality, per cent...	10·6	7·7	6·8

HELMINTHIC DISEASES.

19. *Ankylostomiasis.*—The number of cases recorded fluctuates considerably. In some instances persons harbouring this worm do not appear to suffer in health.

	1913.	1914.	1915.
Cases...	22	60	30
Deaths	3	4	Nil.

20. *Tœnia.*—

	1913.	1914.	1915.
Cases...	737	716	669

21. *Bilharzia.*—

	1913.	1914.	1915.
Cases...	17	48	26

22. *Ascarides.*—

	1913.	1914.	1915.
Cases...	198	186	218

23. *Guinea-Worm.*—A fall of 50 per cent. in the number of cases is very striking.

	1913.	1914.	1915.
Cases...	1,524	1,598	799

The following table shows the chief decreases:—

	1914. Cases.	1915. Cases.	Decrease.
Accra	375	123	67 %
Ashanti	358	189	47 %
Winnebah	249	44	82 %

In Accra the total number of out-patients attending the Dispensary in 1915 was the largest on record, yet the number of cases of guinea-worm shows a remarkable falling off.

Presumably this improvement is due to the pipe-borne water supply.

In Ashanti the decrease is relative, and corresponds with a reduction in the number of troops stationed at Coomassie and Sunyani.

In Winnebah the decrease is also only relative, as there was a large decline in the number of out-patients attending there in 1915.

(*b*) EUROPEAN OFFICIALS.

Table showing the Sick, Invaliding and Death Rates of European Officials.

	1913.	1914.	1915.
Total number of Officials resident	740	768	700
Average number resident	573	646	631
Total number on Sick List	531	499	346
Total number of days on Sick List	3,902	4,067	2,688
Average daily number on Sick List	10	11	7
Percentage of Daily Sick to average number resident ...	1·74	1·70	1·10
Average number of days on Sick List for each Patient	7	8	7
Average sick time to each resident	6·80	6·29	4·25
Total number Invalided	30	24	21
Percentage of Invalidings to total residents	4·05	3·12	3·00
Total deaths	6	11	7
Percentage of Deaths to total residents	0·81	1·43	1·00
Percentage of Deaths to average number resident ...	1·04	1·70	1·10

24. *Causes of Invaliding of European Officials.*—Blackwater fever (3), rheumatism, neurasthenia, syphilis (2 each), anæmia, tuberculosis, gastritis, colitis, defective dentures, defective artificial foot, gunshot injury, siriasis, coxalgia, cardiac asthenia, aneurism, insanity (1 each); total 21.

25. *Causes of Deaths of European Officials.*—Malaria (2), blackwater fever, bronchitis, locomotor ataxia, meningitis, nephritis (1 each); total 7.

26. *Principal Diseases among European Officials.*—Malaria (115), gastritis (27), pyrexia (25), injuries (23), dysentery (16), skin-diseases (15), rheumatism (12), diarrhœa (11).

(*c*) NATIVE OFFICIALS.

Table showing Sick, Invaliding and Death Rates of Native Officials.

	1913.	1914.	1915.
Total number of Officials resident	1,299	1,340	1,604
Average number resident	1,199	1,289	1,534
Total number on Sick List	552	488	515
Total number of days on Sick List	4,621	5,133	4,833
Average daily number on Sick List	12	14	13
Percentage of Daily Sick to average number resident...	1·00	1·08	0·84
Average number of days on Sick List for each Patient	8	10	9
Average sick time to each resident	3·85	3·96	3·15
Total number Invalided	8	11	9
Percentage of Invalidings to total residents	0·61	0·82	0·56
Total Deaths	9	7	5
Percentage of Deaths to total residents	0·69	0·52	0·31
Percentage of Deaths to average number resident ...	0·75	0·54	0·32

27. *Causes of Invaliding of Native Officials.*—Mental debility (3), morbus cordis, tuberculosis (2 each), general debility, nephritis (1 each); total 9.

28. *Causes of Deaths of Native Officials.*—Septicæmia, meningitis, tuberculosis, pneumonia, malaria (1 each); total 5.

(*b*) GENERAL EUROPEAN POPULATION.

(i.) Government Officials	700
(ii.) Employés of Trading Firms ...	677
(iii.) Employés of Mining Companies...	481
(iv.) Missionaries	148
Total	2,006

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF NON-OFFICIALS.

How employed.	Number.	Deaths.	Invalided.	Death rate per cent.	Invaliding rate per cent.
1913.					
Merchants	796	7	43	0·87	5·74
Mining Companies ...	928	5	37	0·53	3·98
Missionaries	126	4	2	3·17	1·62
Totals	1,850	16	82	0·86	4·55
1914.					
Merchants	733	9	24	1·22	3·27
Mining Companies ...	1,020	13	44	1·27	4·31
Missionaries	124	—	2	—	1·61
Totals	1,877	22	70	1·17	3·72
1915.					
Merchants	677	10	28	1·47	4·13
Mining Campanies ...	481	2	14	0·41	2·91
Missionaries	148	1	—	0·67	—
Totals	1,306	13	42	0·99	3·21

29. *Causes of Invaliding of European Non-Officials.*—Diseases of nervous system (8), malaria (7), diseases of digestive system (4), syphilis, morbus cordis, blackwater fever, skin diseases (3 each), eye diseases, ear diseases, debility, tuberculosis (2 each), alcoholism, rheumatism, gunshot wound (1 each); total 42.

30. *Causes of Deaths of European Non-Officials.*—Diseases of brain, accidental injuries, malaria (2 each), blackwater fever, yellow fever, nephritis, alcoholism, pneumonia, enteric fever, abortion (1 each); total 13.

EUROPEAN MORTALITY AND INVALIDING RATES, 1915.

Total Strength.	Deaths.	Invalidings.	Death rate per 1,000.	Invaliding rate per 1,000.
Official ... 700	7	21	10·00	30·00
Non-Official ... 1,306	13	42	9·95	32·15
Totals ... 2,006	20	63	9·97	31·40

III.—SANITATION.

A.—GENERAL REVIEW OF WORK DONE, LAWS PASSED, AND PROGRESS MADE.

(i.) ADMINISTRATIVE.

The staff was strengthened at the beginning of the year by the appointment of a Junior Sanitary Officer and two Medical Officers of Health, but owing to calls occasioned by the War the services of the two latter were not available for sanitary work.

Tours of inspection were made, as occasion demanded, by the Senior Sanitary Officer and the Junior Sanitary Officers, special attention being given to the rapidly rising towns in the cocoa districts that feed the Accra-Akwapim Railway. Of these, Koforidua is the most important at the present, and has received the most attention. The engineers of the Public Works Department have guided its extremely rapid growth in accordance with the town planning scheme originally laid down. When bringing the town under the Towns Ordinance, care was taken to include a much larger area than that actually plotted in the town planning scheme, so that all buildings in this area would be under control and fit in with the general scheme.

During the year the Quarantine Ordinance No. 2 of 1915 became law, and six towns were brought under the provisions of the Towns Ordinance.

The general progress, although perhaps apparently slow, is at the same time steady and satisfactory.

(ii.) PREVENTIVE MEASURES AGAINST:—

(1) Insect-borne Diseases.

(a) *Mosquitoes.*

Malaria, Yellow Fever, Filariasis.—Since malaria, yellow fever and elephantiasis are all propagated by mosquitoes, it may be as well to consider these three diseases together when discussing the measures which have been taken to deal with their casual agents.

The anti-mosquito precautions taken during the year may be described as follows:—

(a) *Drainage.*—This will be discussed more fully under "General Measures," and it need only be said here that drainage is still one of the most important of our anti-mosquito measures.

(b) *Clearance of bush and undergrowth.*—This is also discussed under "General Measures."

(c) *House to house inspection.*—This procedure is necessarily limited to those towns which are served by a sanitary staff, and in places such as Accra, Cape Coast, Seccondee, Obuasi and Coomassie this form of inspection is of special value: it would be idle to think that the Sanitary Inspector is a welcome visitor, but at any rate he is now tolerated where before he was actively opposed.

(d) *Mosquito brigades.*—In the larger towns a certain number of the more intelligent scavengers are kept banded together under a headman for the special purpose of searching for mosquito larvæ and collecting all portable articles which serve, or are likely to serve, as breeding places for mosquitoes.

In Accra this brigade, being kept permanently mobilised, can be brought into action at a moment's notice on the outbreak of a yellow fever epidemic.

(e) *Oiling.*—This is also one of the duties of the mosquito brigades where they exist. It is open to question, however, whether oiling, though a good larvicidal measure in certain cases and under strict supervision, is a politic undertaking. For economic reasons it quite fails to deal with some of our lagoons and larger ponds. and in the case of smaller and more amenable collections of water oiling is often adopted as a palliative where more radical treatment should and could be attempted.

The ponds at Christiansborg afford a good case in point, and these are now being filled in, whereas before they were subjected to a weekly and costly process of oiling.

(f) *Eave gutter inspections.*—Roof gutters require a good deal of attention ; even when perforated they become obstructed and breed mosquitoes, unless frequently inspected. In Accra and in other places along the coast line where "eternite" tiles are used for roofing a very considerable condensation of aqueous vapour occurs at night, and it is found that no relaxation of care is possible even in the dry season.

(g) *Occlusion of holes and crevices in trees.*—In railway clearings where stumps are left, and in the case of old trees (notably the flamboyant and mango), it has been found necessary to fill in the holes that are made artificially, or which result from natural growth and decay. A mixture of sand and tar has been found effective for the purpose.

It was a tree in a private compound that yielded a new species of mosquito for Accra, viz., *Stegomyia metallica.*

(h) *Screening of tanks and barrels.*—In all places under the Towns Ordinance it is a punishable offence to maintain a water storing tank or barrel in an unscreened condition. In the larger stations the condition of all tanks and barrels is made the subject of a weekly report. Despite a piped water supply the tanks and barrels in Accra are still numerous.

(i) *Screening precautions in houses.*—The complete or partial screening of houses near the sea has not proved successful, owing to the rapid corrosion of the gauze. Happily, too, in the segregation areas mosquitoes are not sufficiently in evidence to tempt people to use mosquito rooms other than for sleeping purposes. The portable mosquito cage which is used in the "A" type bungalow is popular ; in other cases the muslin net is universally adopted by Europeans.

(j) *Fumigation.*—The fumigants chiefly used are sulphur and compho-phenique. Fumigation operations have been practically confined to those occasions on which yellow fever has appeared. Clayton machines are stationed at Accra, Cape Coast and Seccondee.

(k) *Legal measures.*—The chief instrument is the Mosquito Ordinance No. 6 of 1911. Summonses are also served on people who are responsible for the unauthorised deposition of tins and bottles. Dealing with the diseases separately, one must mention the prophylactic use of quinine among school children as a special measure in the case of malaria. During the year, 176,200 tabloids have been distributed among the schools of the Colony.

Yellow Fever has a ritual of its own, which comprises notification, fumigation of infected house or district, evacuation of non-immunes where thought desirable, house to house inspection, quarantine, screening of patient, and inspection of non-immunes. When necessary, ships from infected places are inspected at the Gold Coast ports.

No particular measures are taken against filariasis *per se,* but this disease is getting less common.

As regards mosquitoes, the measures vary somewhat according to the difference in the bionomics of the species concerned. Thus it is against the Stegomyia that the house to house campaign is chiefly directed. Drainage, clearing of bush, filling in of ponds and oiling are intended to prevent the breeding of the less common Anopheles. The ridding of ponds of the water lettuce must henceforth figure as a special measure, since at Accra, Sunyani and Nsawam, at any rate, the oiling of certain ponds has been found quite ineffective in preventing the breeding of Mansonoides sp., whose larvæ and pupæ obtain their oxygen from the roots of the lettuce and do not need to come to the surface.

Special localities, too, have their own particular kinds of breeding places. Thus on the coast the crab holes, especially those enlarged by crab hunters, and submerged wrecks have to be dealt with, while in the forest belt the enormous snail shells of the Ashanti villages also need careful attention.

Along the railway, so great is the quantity of aerated waters drunk by the native passengers that special rules have been drawn up to ensure that the thousands of empty bottles are not thrown away in the neighbourhood of the various stations.

(*b*) *Tsetse flies.*

Trypanosomiasis.—The measures adopted against trypanosomiasis consist chiefly in bush clearing, and in Kintampo and Sunyani special attention is paid to the fords and watering places: in these places, too, human sufferers are screened.

The cattle that come into Coomassie from the northern territories are heavily infected, and there is no doubt that these cadaverous cows are acting as carriers, since they are brought into every town where meat is eaten, even down to the coast itself.

Accra is accessible by train and motor, and tsetse flies have been brought into Accra by these services. Special measures dealing with the registration and inspection of equines in Accra have been under consideration during the year.

(2) INFECTIOUS AND EPIDEMIC DISEASES.

(a) *Beri-Beri.*—The Health Authorities have advocated the better housing of the imported and rice eating Kroo labourers, wherever these are employed in large numbers. Only in Seccondee, however, has it been possible to effect any measure of concentration.

(b) *Cerebro-Spinal Meningitis.*—No routine precautions are taken against this disease.

(c) *Chicken Pox—Measles.*—These diseases are endemic in the coast towns, where schools, prisons, and colonies of labourers are chiefly found. Where necessary patients are isolated, but as a rule they are treated at home.

(d) *Cholera, Dysentery and Enteric Fever.*—The vast majority of Europeans are in the habit of boiling and filtering all drinking water, but in spite of constant preaching it cannot be said that the natives have yet adopted this precaution. The use of tinned milk is universal.

Everywhere the water supplies are guarded from contamination as far as possible, and these measures consist in the differentiation of places for drawing water and bathing, the coping of wells, Macgregor pumps, and piped water service as at Accra and some of the mining camps.

An attempt was made at Coomassie to get the butchers to keep their meat covered by gauze cages and covers, but no other measures are adopted by the natives for keeping their foodstuffs in the market from being contaminated by dust and flies. The suppression of flies is one of the main objects aimed at in the combustion or burial of refuse in all places where a European resides, and it is a noticeable truth that a large proportion of cases of dysentery are contracted by Europeans and natives while travelling in the bush.

(e) *Plague.*—The Colony has been free from plague during the year. The sanitary improvements that have been effected during the year may be regarded as anti-plague measures, since these improvements (supervision of buildings, drains, creation of open spaces, road making, &c.), have chiefly been concentrated in those centres where plague has previously appeared.

The natives themselves shew no desire to catch rats even for payment, but in the larger coast towns the Sanitary Authorities have made themselves responsible for the campaign against rats : in Accra the Rodier system has been recently adopted.

(f) *Small Pox.*—Isolation and vaccination are the two chief measures that have been adopted.

In November small pox broke out at Pusgia in Togoland. As this town is close to the British station of Bawku, the Bawku-Pusiga road was patrolled, and 259 persons in Bawku were vaccinated ; no cases occurred in British territory.

During the year the new Vaccination Ordinance has been under consideration, and in the Estimates for 1916 provision has been made for four additional native public vaccinators. Up to the present time Coomassie is the only place where the whole time services of a native official have been employed in vaccination.

VACCINATION FIGURES.

	1914.	1915.
Total number vaccinated ...	7,631	9,723
Total number successful... ...	5,417	7,270

Most of the important stations now possess isolation hospitals, and where these do not exist temporary camps are erected as needs arises.

(g) *Anthrax.*—During June, July and August, there occurred at Zungoeri in the Bawku district of the Northern Territories a disease which attacked first cattle and then humans. In all 32 cattle died, and eight humans out of the eleven attacked. Unfortunately in this far corner of the hinterland the Medical Officer does not seem to have been informed early enough to take any precautions. On receipt of the information, however, he at once set out for the infected district, and from an inspection of the three surviving human cases and from what he heard of the circumstances of the outbreak, Dr. Allan believed the disease to be anthrax. The chiefs were interviewed and told to report in future the occurrence of any similar symptoms occurring in cattle or men ; the selling of diseased cattle was prohibited, and rules were laid down for the segregation of sick cattle and the burning of dead cattle ; the abandonment of certain camping grounds was also ordered.

(h) *Pleuro-pneumonia.*—In order to prevent the spread of pleuro-pneumonia, which broke out among the Fulani cattle in the Benaba district in September, it was arranged that all cattle coming from French territory should be detained for four days at Bawku (N.T.) before being allowed to go south. The chiefs were again instructed to report at once the incidence of any fresh outbreak, and to isolate all sick and bury all dead cattle.

(i) *Rinderpest.*—As this disease was reported to be prevalent in French territory, the Medical Officer, Gambaga, arranged for all cattle coming across the border to be inspected at Bawku and Gambaga, before proceeding south. No case occurred in British territory.

(3) HELMINTHIC DISEASES.

There is little, if anything, to add under this heading to what was written in the report for 1914.

(a) *Ankylostomiasis.*—The constant crusade against promiscuous defæcation is the chief preventive measure adopted, and the medical officers along the coast where the people are most careless in this respect have been at no small pains during the year to foster cleaner habits.

(b) *Bilharziasis.*—This disease is not reported commonly enough to make any special precautions necessary, but undoubtedly the care of the water supplies is our best safeguard.

Dr. Macfie has been pursuing some special investigations with regard to bilharziasis, and possibly the result of his researches may show us in what other directions precautionary measures should be taken.

(c) *Dracunculosis.*—Safeguarding and purification of water supplies are again the measures that have been used for preventing this disease. Nothing much in the way of preventive measures can be done in the case of natives whose duties or pleasures take them on journeys into the bush.

(d) *Tœniasis.*—Inspection of meat by the Medical Officer or his deputy is the chief precaution taken against the consumption of "measly" carcases.

(e) *Trichinosis.*—The pig is found in many a small village or hamlet where cattle are rarely seen, so that it is only possible to arrange for the inspection of pork in those stations where a medical officer is stationed.

(iii.) GENERAL MEASURES.

(a) *Cemeteries.*—No new Public Cemeteries have been declared during the year, but chief's cemeteries have been laid out at Tamale, Gambaga and Kpong.

(b) *Contagious Diseases Hospitals.*—No new contagious diseases hospitals have been started, but that at Addah was completed during the year.

(c) *Clearing of bush and undergrowth.*—This in most places is a measure which recurs annually. but in the larger towns a good deal of land has been won permanently for the purposes of town extension schemes and recreation. It is certainly one of the most satisfactory of all the general preventive measures, since it achieves so many desirable objects at the same time, and despite the curtailment of funds and labour a great deal of good work has been done during the year in all the stations. Left to himself the native does not clear, except to make a farm.

(d) *Disposal of refuse.*—Ultimately all refuse is buried or burned. For the temporary storage of rubbish concrete dustbins are used in towns where the Sanitary Authorities have placed labourers, and the contents of these bins are taken to the incinerators or dumping grounds, as the case may be.

Much good work has been accomplished in using refuse to fill up holes and swamps, but here again the native on his own initiative does nothing towards the useful disposing of rubbish. Some idea of the amount of rubbish that is accumulated by the African in a coast town may be gained from the fact that the Meldrum destructor in Seccondee disposed of 10,718 cartloads during the year, and in addition to this 1,518 cartloads of tins and bottles were buried.

(e) *Disposal of sewage.*—This is a fairly simple matter in the small up-country towns and stations, where the natives construct quite good trench latrines, and where there is plenty of land for changing the sites of these latrines.

In the busy coast towns and in the rapidly-growing cocoa centres with their large floating populations the question of conservancy is by no means an easy matter.

Where the sea allows, and where decency does not forbid, the sea latrine has many advantages, and the sea latrine built at Accra during the year has helped the situation very considerably in that town.

Pan latrines are the rule in towns where the Sanitary Branch has a staff sufficient to carry out the conservancy of the same; the natives along the coast have made no attempt to meet the Government half way by looking after the conduct of the latrines which the Government have built for them. In Axim alone of the coast towns is the night soil trenched, in all other cases it is deposited in the sea. Lack of funds has delayed the construction of tipping platforms which are badly wanted in Accra and other places.

Those natives who do not care to use the public latrines either pay the Government a conservancy fee or arrange privately for the removal of nightsoil.

In the case of Europeans earth closets are the universal rule and these have again proved very satisfactory.

The disposal of liquid sewage remains a difficult problem in the bigger towns. The care and attention that are needed in the private house of a European in the tropics suffice to show at once how difficult it is to keep in good order those public conveniences in an African town which are used by the ignorant and careless masses; pans are emptied as often as men and means will allow, and are cleansed with disinfectants. Towns like Accra and Seccondee have certainly outgrown the dry earth system, or, to be more correct, the pan system (for the native will not use earth to cover his dejecta), and a sewage system is urgently needed in such places.

(f) *Drainage.*—Want of funds has considerably interfered with the construction of cement drains, and most of the Sanitary Engineers' energies in this direction have been confined to Seccondee, Accra and Coomassie; but even in these places the original programme has come very short of fulfilment.

Existing drains have received attention from the Sanitary Authorities as in previous years, but the amount of cleansing which is necessary is increasing because the natives look upon these conveniently placed channels as excellent depôts for much of their refuse, solid and liquid.

The installation of a piped water supply to Accra has thrown a very great deal of additional work on the surface drains of that town, so that, where possible, flushing twice a day has been carried out in order to keep these drains free of the very foul sullage which they leisurely conduct to the outfall.

(g) *Inspection of Kroo labour.*—As one of the consequences of the suspicious case of plague in Accra in 1914, to which allusion was made on page 37 of the Annual Medical and Sanitary Report for 1914, the Health Authorities have been given powers to inspect all imported Kroo boys landing at Accra. The various premises occupied by these labourers during their year's stay in Accra are also inspected from time to time.

These measures, incomplete in application though they are, must be considered important in view of the constant landing at Gold Coast ports of alien immigrants who come from districts where plague, yellow fever and smallpox are endemic. Allusion elsewhere has been made to the desirability of a single location—in the important coast towns—for these indentured Kroo labourers who provide a large percentage of the cases of infectious cases that are dealt with by the Medical Authorities.

(h) *Markets.*—A site has been provisionally selected for a new market at Accra, and plans for a new market at Seccondee are under discussion.

(i) *Mining Camps.*—During the year all the important mining camps were visited by Dr. J. B. Alexander, Medical Officer of Health, who sent in a comprehensive report on his tour of inspection. Some of the mines have shown considerable sanitary activity, and in most cases good work has been done in laying out the workmen's villages. During the year Abbontiakoon Mine has laid out an entirely new village with an independent water supply.

(j) *Railway Sanitation.*—In Accra a Railway Sanitary Committee meets every month to discuss Sanitary matters in connection with the station and railway residential quarters at Accra.

It is very doubtful if enough money has hitherto been expended on the sanitary maintenance of the tracts of Railway land that obtain at every station. Nsawam affords a striking instance of the necessity for keeping cleared all station land, and for filling in the pools and depressions that are so commonly seen in connection with these stations in the forest region.

The line from Seccondee to Coomassie, together with its branch lines, was inspected by Dr. Lorena, Junior Sanitary Officer, at the end of the year, and in his report the writer lays stress on the need for better housing of native railway officials, delimitation of railway land, public conveniences at the railway stations, and the more effective screening of tanks. Rats and mosquitoes were found to be prevalent in all the stations. The sanitation of the stations on the Seccondee-Coomassie line was provided for in 1915 by a vote of £1,000, and this amount gave approximately £5 a mile. A good proportion of this sum, however, was spent in Seccondee and Tarquah.

The Station Masters at the respective stations have been made responsible for the sanitary order of their stations.

(k) *Reclamation.*—No reclamation on any large scale has been possible owing to lack of funds, and the filling in of the Korle Gono lagoon at Accra with sand from the harbour has not been started owing to lack of coal. Minor reclamation schemes have been carried out in most stations as part of the ordinary routine of sanitary work.

(l) *Regulation of Buildings.*—As far as checking unauthorised buildings of all descriptions is concerned there is not much progress to report under this head, because there is still a lack of Building Inspectors.

A great number of authorised buildings, however, have been started or completed by natives during the year, both in the seaport towns and in the cocoa districts. Building permits have been issued by the Town Councils in those towns where such bodies exists, and in other places the local Sanitary Committees are the discretionary authorities.

In the case of the new districts that are being opened up along Accra-Koforidua line and its extension a prospective policy has been adopted; sites of segregation area have been outlined, possible future towns surveyed, and precautions taken against indiscriminate building by early settlers.

(m) *Sanitary Inspections and Prosecutions.*—Shortage of European Staff has interfered sadly with the work of Sanitary inspection, and in the Northern Territories, where whole districts have been shut down as far as medical work is concerned, sanitary inspection has come to a standstill. No very reliable conclusions can be gathered from a perusal of the return of anti-mosquito works: the year has been an abnormal one, there have been frequent changes of medical officers, and some stations have been deprived of their full staff of inspectors. Thus at Obuasi in 1914 there were 108,612 house inspections; the Inspector of villages employed by the mines having left for the war the figures fell to 3,692 for 1915. The total number of inspections for the Colony and its dependencies has fallen from 466,691 to 347,092, while the larval index has risen from ·75 to 1·35 per cent. Here, again, too much stress must not be placed on these figures, for more thorough inspection is likely to produce at first a higher larval index. The gradual declension of the larval index at Accra, where the staff is not subject to so many changes, is probably significant of real improvement; on the other hand, Quittah, with its increased index of 12·26 (twice as large as any other station), affords a good instance of the deterioration that follows the removal of a medical Officer from a station.

As regards inspection of foodstuffs, it is satisfactory to note that at Cape Coast and Seccondee there has been no country meat condemned as unfit for food, though the beef is of a uniformly poor quality. In Accra, on the other hand, 9 per cent. of the cows killed have been condemned wholly or in part, and 8 per cent. of the pigs in the same way.

Little has been done with regard to the inspection of foodstuffs that are on sale in the bazaars and small stores, and nothing much can be done until the markets are better regulated and there is an increase in staff. The native actually seems to prefer much of his food in a state of decay, and any attempt at wholesale condemnation would probably result in the disappearance of the market.

(n) *Segregations.*—In Accra, Cape Coast, Saltpond, Winnebah, Axim, Coomassie and Koforidua, progress can be reported as regards the segregation of European officials. The discomforts and dangers which formerly attended residence within the native quarter are rapidly being exchanged for the peacefulness and comparatively safe seclusion of the segregation areas.

In every single instance the segregation area occupies a position considerably higher than the native town and this in itself means a good deal. At the same time the distance between the official's home and his office has become increased, and it would seem only reasonable and politic that the Government should facilitate the transportation of officials from their homes to their offices by whatever means are best suited to each individual case—it is a long and tedious climb from the town, for instance, of Saltpond to the hill upon which the segregation area is placed ; but any funds which might be spent on the maintenance of a motor service or the grant of a transport allowance would be more than met by the ultimate improvement in health of the officials and by the saving of money which would otherwise have to be spent on rendering the unsegregated sites less unhealthy.

In the report for 1914 it was stated that "there are signs that seem to show a real desire on the part of some mercantile firms to take advantage of segregation." To-day in Accra there are six business firms already occupying quarters outside the town, while others are applying for plots in the segregation area. Yellow fever is proving a powerful ally on the side of the advocates of segregation, and two firms in Accra have been converted directly as the result of recent deaths from yellow fever.

(o) *Slaughter-house.*—The new slaughter-house for Accra was practically finished by the end of the year, and when the various fittings and other details are complete it should prove a commodious and convenient abattoir. With its ample lairage, overhead block and pulley system, cooling room and piped water supply, the new slaughter-house at Accra is far in advance of anything that has been before attempted. Just at first probably the Hausa butchers will find it rather difficult to live up to their new institution, and many object to the new regulations under which they will have to slaughter.

(p) *Town Planning.*—Naturally enough the time of a great war is not the time for the active realisation of any town planning schemes, so that there is little progress to record in this direction. However, an exception has been made in the case of Koforidua, which is developing in a wonderful way, and as the result of forethought this town should be free of some of the disadvantages attached to the towns on the line.

The opportunity afforded by a widespread fire in the village of Berraku, near Winnebah, has not been lost, and this village has been surveyed and a town planning scheme is being drawn up.

(q) *Water Supply.*—In the various reports from Health Officers and Medical Officers there is a depressing repetition of the statement that the water supply is unsatisfactory.

Little has been done to further the water schemes for Seccondee and Coomassie owing to the war. An important event in connection with the Accra water supply was the appointment of an analytical chemist, who since his arrival has been conducting water analyses at Weshiang. There has been no lack of water from the work, and the convenience of a piped supply has been thoroughly appreciated by all. It is disappointing, therefore, to find that the samples of water as examined by the Pathologist still remain bacteriologically impure.

B.—MEASURES TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

(General.)

The remarks made in the 1914 report are equally applicable in this review. The several tours of inspection which have been made during the year were taken advantage of as giving valuable opportunities for spreading the know-

knowledge of hygiene and sanitation in the outlying districts. An encouraging sign of the times is the practical interest in domestic hygiene and town planning that is being shown by the educated native. On more than one occasion the Sanitary Authorities have received a welcome backing up from prominent natives, who have boldly advocated the adoption of some sanitary reform, though such reform has run counter to the immediate interests of many of their fellow natives.

SCHOOL TEACHING.

The Director of Education reports that "the teaching of hygiene has made satisfactory progress during the year, the most pleasing feature being the attempts by the teachers to make the instruction really practical."

C.—RECOMMENDATIONS FOR FUTURE WORK.

In 1914 it was stated "since all works in connection with sanitary improvements involve the outlay of money, the present would hardly seem the time to put forward any recommendations." The same applies to 1915. At the same time I would put on record the urgent necessity that there is for the appointment of trained European Building Inspectors, and some definite scheme for the improvement of water supplies in the smaller towns.

D. ALEXANDER,
Senior Sanitary Officer.

ACCRA,
26*th April*, 1916.

IV.—METEOROLOGY.

31. The Meteorological observations are given in Table V. They vary but little from those of last year.

V.—HOSPITALS AND DISPENSARIES.

32. The Hospitals and Dispensaries throughout the Colony and its Dependencies were efficiently maintained, with the exception of the Accra European Hospital, which at the beginning of the year had to be abandoned owing to its dangerous condition.

Since then the Accra rest-house has served as a temporary European hospital.

The new European hospital was practically completed during the year, but could not be utilised, owing to the absence of suitable quarters for the Nursing Sisters.

New native hospitals were opened at Coomassie and Saltpond, and a dispensary with offices at Koforidua.

SUMMARY OF HOSPITAL AND DISPENSARY RETURN, 1914.

	In-patients.		Out-patients.
Europeans	438	...	1,313
Natives, including W.A.F.F. and Civil Police	3,274	...	46,878
Totals	3,712	...	48,191

Surgical Operations 500.

1915.

	In-patients.		Out-patients.
Europeans	303	...	1,023
Natives, including W.A.F.F. and Civil Police	2,966	...	44,300
Totals	3,269	...	45,323

Surgical Operations 458.

LUNATIC ASYLUM.

33. Separate accommodation for criminal lunatics has been provided. The following table shows a small decrease in the number of inmates.

	Remaining at the end of 1914.	Admitted during the year 1915.	Total under treatment, 1915.	Discharged.	Deaths.	Remaining at the end of 1915.
Males	101	27	128	21	24	83
Females	14	6	20	3	2	15
TOTAL	115	33	148	24	26	98

Mortality, 17·5 per cent.

PRISONS.

34. The general health in the prisons has continued satisfactory.

The mortality for the past three years has been the same, viz., 0·3 per cent.

	1913.	1914.	1915.
Total convicts	5,358	5,697	6,480
Total sick	552	390	677
Total deaths	18	22	20

VI.—SCIENTIFIC.

35. The Annual Report of the Accra Laboratary is published separately.

H. TWEEDY,

19*th April,* 1916. *Acting Principal Medical Officer.*

TABLE IV.

1.—NAME OF TOWN.

Station.	1914.		1915.	
	Approximate Area.	No. of proclaimed open spaces.	Approximate Area.	No. of proclaimed open spaces.
Accra	2,100 acres	2	2,100 acres	16
Cape Coast	2½ sq. miles	3	2½ sq. miles	3
Seccondee	3 sq. miles	3	3 sq. miles	3
Coomassie	9 sq. miles	—	9 sq. miles	—

2.—POPULATION.

Station.	1914.					1915.				
	Natives.		Europeans.		Total.	Natives.		Europeans.		Total.
	Males.	Females.	Males.	Females.		Males.	Females.	Males.	Females.	
Accra ...	9,300	10,000	225	25	19,550	9,260	9,800	220	18	19,298
Cape Coast ...	5,422	5,849	43	8	11,322	5,422	5,849	39	10	11,320
Seccondee ...	3,149	5,807	152	14	9,122	5,921	6,177	150	10	12,258
Coomassie ...	12,000	11,000	89	6	23,153 (Syrians 58)	12,060	11,000	97	4	23,162

3.—HOUSING.

Station.	1914.				1915.			
	Houses.		Huts.		Houses.		Huts.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Accra	136	2,700	See Houses.		140	2,720	See Houses.	
Cape Coast	18	1,134	—	281	21	1,400	—	269
Seccondee	60	—	—	15	74	1,039	—	—
Coomassie	47	913	—	150	41	940	—	140

4.—MOSQUITO PROTECTION OF HOUSES.

Station.	1914.				1915.			
	Number of houses wholly protected.	Number of Houses with Mosquito proof room.	Made wholly protected in 1914.	Partially protected in 1914.	Number of houses wholly protected.	Number of houses partially protected.	Made wholly protected in 1915.	Partially protected in 1915.
Accra	—	20	—	18	—	45	—	25
Cape Coast	—	3	—	—	—	4	—	—
Seccondee	—	—	—	—	—	—	—	—
Coomassie	—	6	—	—	—	8	—	—

Table IV.—*continued.*

5 (a).—Erection of New Buildings during the Year.

	1914.					1915.				
	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction
Accra	—	190	—	Numerous	—	30	215	—	Numerous	—
Cape Coast ...	—	3	—	1	—	—	50	—	—	—
Seccondee ...	—	—	—	—	—	—	47	—	—	—
Coomassie ...	12	60	—	—	—	—	30	—	—	—

5 (b).—Action Taken.

Station.	1914.				1915.			
	Number of prosecutions.		Number demolished.		Number of prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Accra	—	—	8	3	—	—	—	—
Cape Coast	—	1	15	3 complete, 7 partly.	—	—	3	14 partly demolished
Seccondee	—	—	—	—	—	—	—	15
Coomassie	—	—	—	—	—	—	10	1

6.—Markets.

Station.	1914.			1915.		
	Number.	Paved and drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.
Accra	2	2	—	2	2	—
Cape Coast	1	—	1	1	—	1
Seccondee...	2	2	—	4	3	1
Coomassie...	2	1	1	2	1	1

7.—Slaughter Houses.

Station.	1914.			1915.		
	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved
Accra	1	1	—	1	1	—
Cape Coast	1	1	—	1	1	—
Seccondee...	2	2	—	2	2	—
Coomassie...	1	1	—	2	2	—

TABLE IV.—*continued.*

8. LATRINES.

	1914.																1915.															
	Number.				New Ones.				Repaired.				Demolished.				Number.				New Ones.				Repaired.				Demolished.			
	Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.	
	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats	Number.	Seats
Accra	41	434	33	253	21	132	20	120	—	—	—	—	4	48	4	48	36	425	34	202	1	12	1	12	—	—	—	—	3	36	3	36
Cape Coast ...	15	160	15	160	—	—	—	—	14	—	13	—	1	8	1	8	9	152	9	152	—	—	—	—	5	—	3	—	—	—	—	—
Seccondee ...	12	102	8	64	3	14	3	14	5	45	6	54	3	14	3	14	12	102	8	64	—	—	—	—	4	31	3	30	—	—	—	—
Coomassie ...	28	186	27	83	11	92	11	92	2	6	2	6	12	81	11	77	26	201	26	201	6	48	6	48	—	—	—	—	8	42	8	42

8. LATRINES (PRIVATE).

	1914.									1915.								
	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of nightsoil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Cesspools regularly oiled.	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of nightsoil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra	136	480	—	56	—	—	—	—	—	218	550	42	66	—	—	—	—	—
Cape Coast	94	853·33	—	33	—	—	—	1	—	97	831	84	33	—	—	—	—	—
Seccondee	74	30	375	—	—	—	—	—	—	101	41	41	25	—	—	—	—	—
Coomassie	107	289	108	36	—	—	—	—	—	89	327·8	187	36	—	—	—	—	—

TABLE IV.—*contd.*

9. REMOVAL OF REFUSE.

STATION.	1914.						1915.					
	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from streets.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from streets.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.
Accra	41	15	80	19	14	24	42	13	86	10	24	24
Cape Coast	40	11	62·16	1	—	34	40	11	67 cart-loads	1	1 cart-load	34
Seccondee	18	8	30	2	4	56	19	8	27 cart-loads	2	4 cart-loads	56
Coomassie	—	20 wheel barrows	89 head-loads	6	288 head-loads	27	—	20 barrows 2 hand carts	65 head-loads	7	94 head-loads*	23

* Most of the rubbish is removed to the incinerators by the natives themselves and there dealt with. The figures given only deal with work done by Sanitary labour.

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	1914.												1915.											
	Buried or trenched.			Burnt.			Thrown into sea.			Otherwise dealt with.			Buried or trenched.			Burnt.			Thrown into sea.			Otherwise dealt with.		
	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.
Accra	—	33	—	—	—	—	480	—	2	—	50	—	—	60	—	—	—	—	600	—	2	—	96	—
Cape Coast	—	1	1/15 h-ld.	—	61·16	858·33	—	—	1/7	—	—	—	—	1	1/15 h-ld.	—	66	—	831	—	1/7	—	—	—
Seccondee	—	—	—	—	—	—	80	27·3	1·5	—	—	—	—	—	—	—	—	—	347	27	2½	—	—	—
Coomassie	—	—	28	289	—	—	—	—	—	379	—	—	327·8	—	24·5	—	159	—	—	—	—	—	—	—

11. CARTLOADS OF CANS, BOTTLES, AND INCOMBUSTIBLE MATERIAL FROM HOUSES, HUTS AND COMPOUNDS.

	1914.	1915.
Accra	14	25
Cape Coast...	1	1
Seccondee	4	3
Coomassie	22 Head-loads	36 Head-loads.

TABLE IV.—*continued.*

12.—WATER SUPPLY.

Station.	Pipe-Borne Water.				Wells.				Tanks.															Barrels.	
					Public.		Private.		Public.						Private.						Native.				
	Source.	Linear yards.	Public stand pipes.	Private stand pipes.	No.	M.P., &c.	No.	M.P., &c.	Under-ground.	M.P., &c., pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Under-ground	M.P., &c., pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Wood.	Iron.	Con-crete.	No.	M.P.
Accra	River Densu	41,284	47	244	—	—	150	130	16	—	78	78	28	78	90	90	120	120	100	320	12	64	150	900	700
Cape Coast	—	—	—	—	8	5	238	227	14	13	10	10	—	24	66	64	126	124	100	92	11	110	5	650	621
Seccondee	—	—	—	—	8	8	219	219	—	—	—	—	—	—	22	22	286	286	—	286	6	258	22	529	529
Coomassie	—	—	—	—	20	9	156	43	—	—	—	—	—	—	1	1	43	41	15	28	2	39	2	64	54

13.—DRAINAGE. (Public).

Station.	1914				1915				1914			1915		
	Masonry Drains.								Earth Drains.					
	Lineal Yards	Lineal Yards Re-constructed	Lineal Yards Repaired.	Lineal Yards Con-structed	Lineal Yards	Lineal Yards Re-constructed	Lineal Yards Repaired	Lineal Yards Con-structed	Lineal Yards cleaned	Lineal Yards Dug	Frequency of Cleaning	Lineal Yards Cleaned	Lineal Yards Dug	Frequency of Cleaning
Accra	24,749	—	—	8,085	26,541	—	187	1,792	No information available		5 times quarterly			Every 2 months.
Cape Coast	18,625	$118\frac{2}{3}$	162	709	18,715	303	260	90	300	913	Continu-ously	166	88	Continuously
Seccondee	—	—	—	—	—	—	—	2,147	—	—	—	—	225	
Coomassie	5,840	—	—	840 sq. yds.	7,270	—	200	590	39,415	8,652	7 times monthly	33,300	2,190	4 times monthly.

13.—DRAINAGE. (Private).

Nil.

TABLE IV.—*continued.*

14.—CLEARANCE OF UNDERGROWTH, GRASS, WEEDS, &C.

Station.	1914.		1915.	
	Square Yards Grass, &c., cut and removed.	Frequency of Clearance.	Square Yards Grass, &c., cut and removed.	Frequency of Clearance.
Accra	1,052,426	Three times monthly or oftener if required ...	3,890,372	Thrice a year.
Cape Coast	4,335,698	Continuously	2,290,895	Continuously.
Seccondee	680,885	Yearly	530,672	—
Coomassie	427,223	Monthly	519,674	Monthly.

15.—EXCAVATIONS AND LOW-LYING LAND.

Station.	1914.							1915.						
	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, &c., fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, &c., fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.
Accra	Variable	26	2,000	—	Not known	3	7	63	20	1,500	Not known	Not known	—	—
Cape Coast	Variable	208	—	—	9,002	—	6·75	—	12 small holes	—	—	—	—	—
Seccondee	—	—	—	—	—	—	—	—	—	—	20,337	—	—	—
Coomassie	—	87	814	—	700	—	4	—	27	100 sq. yds.	100 wells.	384	—	1

TABLE IV.—*continued.*

16. OILING.

Station.	1914.				1915.			
	Drains oiled.	Pools and excavations oiled.	Tanks and barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and excavations oiled.	Tanks and barrels oiled.	Men employed daily for oiling.
Accra	1,327	10,000	2,450	8	1,400	3,120	10,400	3
Cape Coast	282	459	587	4	298	366	392	4
Seccondee	—	As required.		—	10,967	1,534	8	2
Coomassie	775	409	105	3	430	286	233	2

17.—INSPECTIONS AND PROSECUTIONS.

Station.	1914.							1915.							
	Inspectors Employed.	Houses Inspected.	Houses where Larvæ were found.	Notices against Larvæ.	Persons fined for Larvæ.	Notices re Insanitary Conditions.	Persons fined for Insanitary Conditions.	Inspectors Employed.	Houses Inspected.	Houses where Larvæ were found.	Notices against Larvæ.	Persons fined for Larvæ.	Notices re Insanitary Conditions.	Persons fined for Insanitary Conditions.	No. of Soda and Aerated Factories Inspected.
Accra	11	64,500	925	925	574	529	—	12	1,858	383	381	250	480	290	—
Cape Coast...	13	27,176	352	541	303	224	3	12	32,296	215	490	161	59	76	—
Seccondee	7	98,401	227	—	227	1,386	341	7	96,181	277	529	248	951	423	—
Coomassie	3	16,477	307	31	307	151	935	6	31,141	844	1	499	32	1,145	1

TABLE V.

THE METEOROLOGICAL OBSERVATIONS TAKEN AT THE STATIONS MENTIONED DURING THE YEAR 1915.

STATION.	TEMPERATURE.						RAINFALL.		WIND.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Inches.	Degree of Humidity.	General Direction.	Average Force.	
Accra... ...	144·39	66·83	85·85	73·72	12·13	79·78	22·81	72·24	S.W.	–	
Aburi ...	—	69·04	87·45	68·38	19·07	77·91	49·65	87·22	S.W.	—	
Addah ...	140·90	69·88	85·79	75·46	10·33	80·62	31·10	81·93	S.W.	—	
Quittah ...	116·39	74·65	90·36	73·59	16·77	81·97	29·47	74·33	S.W.	—	
Cape Coast ...	141·59	68·49	85·58	71·88	13·70	78·73	33·84	78·87	S.W.	—	
Seccondee ...	135·01	71·25	87·15	70·66	16·49	78·90	33·89	55·87	S.W.	—	
Axim... ...	132·15	71·98	82·27	66·54	15·73	74·40	81·25	88·78	S.W.	—	
Tarquah ...	140·47	—	89·01	66·47	22·54	77·74	51·58	79·55	—	—	
Coomassie ...	146·61	65·81	89·95	71·69	18·26	80·82	52·18	86·24	—	—	
Kintampo ...	151·74	—	90·70	68·87	21·83	79·78	67·88	63·77	—	—	
Sunyani ...	134·81	70·26	90·40	64·84	25·56	77·62	49·11	74·75	—	—	
Gambaga ...	—	—	90·13	—	—	—	59·34	59·27	—	—	
Tamale ...	150·19	63·13	95·03	70·78	24·25	82·90	42·65	66·98	—	—	

TABLE VI.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1915.

Diseases.	Remaining in Hospital at end of 1914.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1915.	Remarks.
		Admissions.	Deaths.			
Infective Diseases.						
Beri-Beri	1	18	4	19	2	
Chicken-Pox	1	89	—	90	8	
Dysentery { Amœbic ...	—	21	4	21	—	
Dysentery { Type undetermined ...	1	129	17	130	3	
Enteric	—	17	4	17	1	
Gonorrhœa	—	42	—	42	1	
Influenza	—	3	—	3	—	
Leprosy—						
(*a*) Nodular	6	10	2	16	6	
(*b*) Anæsthetic ...	1	—	—	1	—	
Malaria—						
(*a*) Tertian	1	122	1	123	1	
(*b*) Quartan	1	8	1	9	—	
(*c*) Aestivo-Autumnal	—	61	1	61	—	
(*d*) Chronic Malaria	—	10	—	10	—	
(*e*) Blackwater ...	1	6	2	7	—	
(*f*) Typeundetermined	3	55	—	58	2	
Measles	—	7	—	7	—	
Mumps	—	4	—	4	—	
Pneumonia	5	78	27	83	7	
Pyrexia	—	32	—	32	3	
Rheumatic Fever ...	—	37	—	37	1	
Septicæmia	1	10	6	11	—	
Trypanosomiasis (Sleeping Sickness)	—	9	3	9	—	
Small-Pox	1	6	—	7	—	
Syphilis—						
(*a*) Primary	1	12	1	13	1	
(*b*) Secondary ...	—	49	—	49	3	
(*c*) Inherited... ...	—	1	—	1	—	
Tetanus	—	6	5	6	—	
Tuberculosis	2	42	19	44	2	
Yaws	—	21	—	21	1	
Yellow Fever	—	1	1	1	—	
Other Diseases	1	2	—	3	—	
Intoxications.						
Alcoholism	—	6	1	6	—	
Morphinism	—	1	—	1	—	
General Diseases.						
Anæmia	—	10	1	10	1	
Debility	2	13	—	15	1	
Diabetes...	—	1	1	1	—	
Rheumatism, Chronic ...	—	41	—	41	—	
Other Diseases	—	18	2	18	1	

Diseases.	Remaining in Hospital at end of 1914.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1915.	Remarks.
		Admissions.	Deaths.			
LOCAL DISEASES.						
Diseases of the Nervous System :—						
Sub-section 1.						
Neuritis	—	7	—	7	—	
Meningitis	—	4	3	4	—	
Myelitis	1	—	—	1	—	
Abscess of Brain ...	—	1	1	1	—	
Congestion of Brain ...	—	1	1	1	—	
Other Diseases	—	4	1	4	—	
Sub-section 2.						
Apoplexy	—	1	1	1	—	
Paralysis...	1	11	3	12	—	
Chorea	—	1	—	1	—	
Epilepsy	1	6	1	7	—	
Neuralgia	—	2	—	2	—	
Other Diseases	—	9	—	9	—	
Sub-section 3.						
Mental Diseases :—						
Mania	—	4	—	4	1	
Melancholia ...	—	1	1	1	—	
Dementia	—	1	—	1	—	
Delusional Insanity	—	3	—	3	—	
Diseases of the Eye :—						
Conjunctivitis ...	—	24	—	24	—	
Keratitis	—	3	—	3	—	
Ulceration of Cornea	—	2	—	2	—	
Iritis	—	7	—	7	1	
Cataract	1	3	—	4	1	
Other Diseases ...	—	4	—	4	—	
Diseases of the Ear :—						
Inflammation ...	—	2	—	2	—	
Other Diseases ...	—	4	—	4	—	
Diseases of the Nose ...	—	2	—	2	—	
Diseases of the Circulatory System :—						
Pericarditis ...	—	2	2	2	—	
Valvular Mitral ...	—	9	5	9	—	
,, Aortic ...	—	2	—	2	—	
Aneurism	—	2	1	2	—	
Other Diseases ...	—	17	2	17	2	
Diseases of the Respiratory System :—						
Laryngitis	—	5	—	5	—	
Bronchitis ...	—	82	5	82	1	
Broncho-Pneumonia	—	5	—	5	—	
Abscess of Lung ...	2	1	—	3	—	
Emphysema ...	—	2	1	2	—	
Pleurisy	1	26	4	27	2	
Empyema	1	1	1	2	1	
Other Diseases ...	—	10	3	10	1	

Diseases.	Remaining in Hospital at end of 1914.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1915.	Remarks.
		Admissions.	Deaths.			
LOCAL DISEASES—*contd.*						
Diseases of the Digestive System :—						
Stomatitis	—	1	—	1	—	
Caries of Teeth ...	—	2	—	2	—	
Sore Throat ...	—	3	—	3	—	
Inflammation of Tonsils	1	8	—	9	—	
Gastritis	1	33	—	34	1	
Dilation of Stomach	—	1	—	1	—	
Dyspepsia	—	14	—	14	—	
Enteritis	1	14	5	15	1	
Appendicitis ...	—	7	1	7	—	
Colitis	—	10	—	10	—	
Ulceration of Intestines	—	1	1	1	—	
Hernia	7	43	3	50	2	
Diarrhœa	—	91	3	91	—	
Constipation ...	—	37	—	37	2	
Colic	—	28	—	28	1	
Hæmorrhoids ...	—	23	—	23	—	
Hepatitis—Acute ...	—	22	—	22	2	
Abscess of Liver ...	—	10	7	10	—	
Cirrhosis	—	2	1	2	—	
Jaundice	1	3	—	4	1	
Peritonitis	—	6	4	6	1	
Ascites	1	18	1	19	—	
Other Diseases ...	2	21	1	23	3	
Diseases of the Lymphatic System :—						
Splenitis	—	2	—	2	1	
Inflammation of Lymphatic Gland	1	24	—	25	1	
Suppuration of Lymphatic Gland ...	2	23	—	25	—	
Lymphangitis ...	—	1	—	1	—	
Elephantiasis ...	3	2	—	5	—	
Other Diseases ...	—	3	—	3	—	
Diseases of the Urinary System :—						
Acute Nephritis ...	—	18	4	18	3	
Bright's Disease ...	1	6	2	7	1	
Cystitis	—	10	1	10	3	
Hæmaturia... ...	—	3	—	3	—	
Other Diseases ...	—	5	—	5	—	
Diseases of the Generative System :—						
(Male Organs) :						
Urethritis	—	7	—	7	1	
Gleet	—	3	—	3	—	
Stricture	—	26	—	26	—	
Soft Chancre ...	—	6	—	6	2	
Hydrocele	1	18	—	19	2	
Orchitis	—	18	—	18	—	
Epididymitis ...	—	2	—	2	—	
Abscess of Testicle	1	3	—	4	—	
Other Diseases ...	1	33	—	34	1	

Diseases.	Remaining in Hospital at end of 1914.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1915.	Remarks.
		Admissions.	Deaths.			
LOCAL DISEASES—*contd.*						
Diseases of the Generative System—*contd.*						
(Female Organs) :						
Ovarian Cyst ...	—	1	—	1	—	
Endometritis ...	2	18	—	20	1	
Displacement of Uterus	—	6	—	6	—	
Vaginitis	—	4	—	4	—	
Amenorrhœa ...	—	2	—	2	—	
Dysmenorrhœa ...	—	4	—	4	—	
Leucorrhœa ...	—	1	—	1	—	
Abortion	—	4	—	4	—	
Delayed Labour ...	—	5	1	5	—	
Postpartem Hæmorrhage	—	1	1	1	—	
Retained Placenta...	—	4	—	4	—	
Puerperal Septicæmia	—	2	1	2	—	
Mastitis	—	1	—	1	—	
Other Diseases ...	—	18	1	18	1	
Diseases of Organs of Locomotion :—						
Osteitis	—	11	1	11	1	
Arthritis	2	15	—	17	2	
Spondylitis... ...	—	1	—	1	—	
Bursitis	1	1	—	2	—	
Other Diseases ...	2	45	2	47	1	
Diseases of Connective Tissue :—						
Cellulitis	1	34	—	35	1	
Abscess	5	103	3	108	3	
Other Diseases ...	—	4	1	4	—	
Diseases of the Skin :—						
Urticaria	—	2	—	2	—	
Eczema	—	2	—	2	1	
Boil...	—	25	—	25	2	
Carbuncle	—	2	—	2	—	
Herpes	—	2	—	2	—	
Ulcers	25	295	4	320	20	
Scabies	—	2	—	2	—	
Other Diseases ...	—	12	—	12	1	
Injuries :—						
General	3	32	8	35	2	
Local	17	328	13	345	22	
Surgical Operations ...	—	23	3	23	—	
Tumours...	2	29	5	31	1	
Poisons	—	11	—	11	—	
Parasitis :—						
Bilharziasis ...	—	3	—	3	1	
Cestoda :—						
Tænia Solium ...	—	15	—	15	—	
Nematoda :—						
Ascaris	—	7	—	7	1	
Dracunculus ...	10	168	—	178	8	
Filariasis	—	2	—	2	—	
Ankylostomiasis ...	—	5	2	5	—	
Insecta :—						
Chiggers	—	8	—	8	—	
TOTAL ...	131	3,138	219	3,269	153	

TABLE VII.

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1915.

Infective Diseases.	Number of Cases.
INFECTIVE DISEASES.	
Beri-Beri	31
Chicken-Pox	68
Dengue	2
Dysentery (*a*) Amœbic	57
(*b*) Bacillary	12
(*c*) Type undetermined	402
Enteric	4
Erysipelas	2
Gonorrhœa	808
Influenza	74
Leprosy (*a*) Nodular	19
(*b*) Anæsthetic	13
Malaria (*a*) Tertian	863
(*b*) Quartan	37
(*c*) Aestivo-autumnal	166
(*d*) Chronic Malaria	152
(*e*) Blackwater	2
(*f*) Type undetermined	1,266
Measles	15
Mumps	31
Pneumonia	129
Pyrexia	244
Rheumatic Fever	19
Septicæmia	21
Trypanosomiasis (Sleeping Sickness)	8
Small-Pox	5
Syphilis (*a*) Primary	120
(*b*) Secondary	236
(*c*) Inherited	41
Tetanus	3
Tuberculosis	232
Whooping Cough	77
Yaws	508
Other Diseases	6
INTOXICATIONS.	
Alcoholism	7

Diseases.	Number of Cases.
GENERAL DISEASES.	
Anæmia	254
Debility	235
Diabetes	2
Goitre	5
Gout	6
Leucocythæmia	3
Rheumatism—Chronic	1,955
Rickets	10
Other Diseases	123
LOCAL DISEASES.	
Diseases of the Nervous System	604
,, ,, Eye	2,019
,, ,, Ear	878
,, ,, Nose	255
,, ,, Circulatory System	227
,, ,, Respiratory System	4,429
,, ,, Digestive System	8,995
,, ,, Lymphatic System	522
,, ,, Urinary System	220
,, ,, Generative System (Male)	651
,, ,, ,, ,, (Female)	767
,, ,, Organs of Locomotion	1,140
,, ,, Connective Tissue	1,229
,, ,, Skin	7,004
INJURIES.	
General	63
Local	5,548
SURGICAL OPERATIONS	114
TUMOURS	255
MALFORMATIONS	12
POISONS	52
PARASITES	2,066
TOTAL	45,323

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